

TRADING-OFF SUSTAINABILITY:
CHOICE AND WILLINGNESS-TO-PAY GIVEN A TRADE-OFF BETWEEN
SUSTAINABILITY AND FUNCTIONAL PERFORMANCE

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ABSTRACT

Given a choice between a product with superior sustainability (and average functional performance) and a product with superior functional performance (and average sustainability), which will consumers choose and why? How does consumers' willingness-to-pay differ for each product given their choice? Our research suggests that consumers presented with such a trade-off will tend to choose the product with superior functional performance over the product with superior sustainability, due to feelings of distress, until a minimum threshold of functional performance is achieved. In addition, our research shows that choice given this trade-off depends upon the degree to which consumers value sustainability. Further, we demonstrate that the effect of this individual difference is due to differences in the degree to which consumers feel confident and/or guilty when making a choice in this context. We also demonstrate that even when consumers do choose sustainability (over performance), their willingness-to-pay is lower than that of consumers who instead choose performance (over sustainability). Finally, we demonstrate one way in which managers can use an understanding of the emotions mediating choice in this context to improve both the choice likelihood and willingness-to-pay for sustainable products given a trade-off with product performance.

INTRODUCTION

Though the adoption of sustainability as a corporate objective and strategy varies widely, global businesses are increasingly recognizing and responding to this evolving trend (Kolk 2003). The popular press has also taken note of the growing interest in sustainability by both businesses and by consumers (Gogoi 2008; McClaran 2008; Smith 2007). While many businesses recognize the strategic benefits of adopting sustainable practices, and developing and promoting sustainable products, many also recognize the risk given the wide gap between consumers' articulated support of sustainability and the disproportionately low levels of actual "sustainable consumption" given these articulated values (UNEP 2005). There are a variety of potential reasons for this gap between articulated values and consumption behavior including the frequent price premium and lack of availability of sustainable products. However, prior research has also shown that there are also reasons for this gap specific to the products themselves. For example, Luchs et al. (working paper) demonstrate that consumers often expect there to be a trade-off between a product's sustainability and its level of functional performance. And, in some cases, this trade-off may be real and not just perceived. Given this, it is important to understand consumers' responses given a choice between a product with superior sustainability (and average functional performance) and a product with superior functional performance (and average sustainability) as well as to find ways in which to encourage consumption of sustainable products in the face of a trade-off between sustainability and product performance.

Consumer tradeoffs involving different types of attributes, such as hedonic and utilitarian attributes, and the emotional and behavioral consequences of such tradeoffs have been studied by marketing researchers (Chitturi, Raghunathan, and Mahajan 2007; Luce, Bettman, and Payne 2001;

Dhar and Wertenbroch 2000). However, there is a need to understand how consumers make tradeoffs involving sustainability (i.e., environmental and social responsibility) and functional performance. Trudel and Cotte (2009) find that consumers are willing to pay a slight premium for a highly sustainable product compared with an otherwise similar product with a low sustainability rating. However, their research does not address what consumers would be willing to pay for a product with superior sustainability given a trade-off with functional performance, or whether they would choose such a product in the first place given an alternative. There is good reason to believe, however, that when consumers consider purchases based in part on product sustainability, they are doing so in the context of a trade-off with product functional performance. For example, if a consumer is interested in purchasing a Toyota car, their consideration set may include a Toyota Prius and a Toyota Camry. In this case, they must make a trade-off between a car that with superior sustainability, by virtue of its fuel efficiency, and another car with superior functional performance, e.g. greater power. Understanding the theoretical basis for the emotional and behavioral consequences of such trade-offs is critical for firms interested in developing and promoting relatively more sustainable products without sacrificing financial performance – and potentially improving upon firm financial performance through product sustainability.

From a theoretical perspective, this research builds upon previous work on hedonic vs. utilitarian attribute tradeoffs, regulatory focus theory, tradeoff emotions, and consumer decision making (e.g., Bagozzi, Gopinath, and Nyer 1999; Chitturi, Raghunathan, and Mahajan 2007; Higgins 2001; Luce, Bettman, and Payne 2001) to address several questions. First, given a choice between a product with superior sustainability (and average functional performance) and a product with superior functional performance (and average sustainability), which will be preferred and why? In addition, how does consumers' willingness-to-pay differ for each product given their choice?

And critically, how can choice likelihood and willingness-to-pay for products with superior sustainability be improved despite a trade-off with functional performance?

We begin to address these questions by considering specific findings from a related trade-off task – that of choosing between a product with superior functional/utilitarian performance (and average hedonics/aesthetics) and a product with superior hedonics (and average functional performance). Chitturi, Raghunathan, and Mahajan (2007) demonstrate the principle of functional precedence wherein consumers favor superior functional performance over superior hedonics in choice tasks until a certain threshold of minimum functional performance is achieved. However, they also demonstrate that consumers are willing to pay more for superior hedonics compared to superior functional performance - the principle of hedonic dominance. Chitturi et al., (2007) argue that there is a fundamental difference in the type of goals hedonic and utilitarian benefits help achieve (also see Chernev 2004). Though both functional performance and hedonics fulfill self-serving goals, they differ with respect to the nature of the goals: prevention goals versus promotion goals. Prevention goals are associated with safety, security, and necessities whereas promotion goals are associated with fun, pleasure, and luxuries (Chitturi et al., 2007; Higgins 1997; 2001). Chitturi et al. (2007) show that the principle of functional precedence is based on the moral superiority of prevention goals fulfilled by functional attributes over promotion goals fulfilled by hedonic attributes. Thus, choosing functional performance over superior hedonics is the morally superior decision.

However, in tradeoff scenarios involving sustainability and functional performance, the choice is between the morally superior altruistic goals of product sustainability and the morally inferior self-serving goals of functional performance. In other words, given prior research, one might conclude that consumers would choose the product with superior sustainability given its moral

superiority. This result, if found, would be consistent with the appraisal theory of emotions (Roseman 1991), based upon which consumers would be expected to feel greater guilt from favoring morally inferior functional performance over morally superior sustainability. However, they may also feel greater confidence from favoring superior functional performance over sustainability. This raises several unaddressed questions about a trade-off involving functional performance and sustainability: How does this trade-off affect consumers' emotional responses and choices? How, if at all, do emotional responses and choices depend on the degree to which consumers believe that product sustainability is important? In addition, how does consumers' willingness-to-pay differ for superior functional performance versus superior sustainability? And critically, how can choice likelihood and willingness-to-pay be improved for products with superior sustainability despite a trade-off with functional performance?

We address these questions across three studies of undergraduate students at North American universities, using the context of a trade-off within the product categories of shoes (Study 1 and Study 2) and cell phones (pending Study 3). Our results suggest that consumers presented with such a trade-off will tend to choose the product with superior functional performance over the product with superior sustainability, due to feelings of distress, until a minimum threshold of functional performance is achieved. However, given this trade-off, choice also depends upon the degree to which consumers value sustainability. The importance of sustainability to consumers is reflected in the degree to which they feel guilty and/or confident when making a choice in this context. We also demonstrate that even when consumers do choose sustainability (over functional performance), their willingness-to-pay is lower than that of consumers who instead choose functional performance (over sustainability). Finally, we demonstrate one way in which managers can use an understanding of the

emotions mediating choice in this context to improve both the choice likelihood and willingness-to-pay for sustainable products given a trade-off with functional performance (pending Study 3).

THEORY AND HYPOTHESES

Given a trade-off between a product with superior sustainability (and average functional performance) and a product with superior functional performance (and average sustainability), which will consumers choose? On the one hand, previous research might suggest that consumers would choose sustainability over performance. Chitturi, Raghunathan and Mahajan (2007) studied the emotional and behavioral consequences of choices involving a trade-off between functional/utilitarian performance and hedonics/aesthetics. They demonstrated that in a “loss-loss” scenario, in which consumers must choose between two products – neither of which provides sufficiently high levels on either dimension – consumers will choose the product with superior functional performance over the product with superior hedonics. They argue that the moral superiority of the product with superior functional attributes (Berry 1994) contributes to a variety of negative emotions that mediate this choice. Based on the appraisal theory of emotions, choosing a morally inferior option evokes greater guilt and distress (Roseman 1991; Lee and Holden 1999; Kivetz and Simonson 2002; Chitturi et al. 2007). As such, Chitturi et al (2007) demonstrate that until a minimum threshold of functional performance is achieved, consumers will choose the product with superior functional performance because it is the morally superior option and doing so reduces feelings of guilt and distress.

In the current context, however, in which consumers are choosing between functional performance and sustainability, the product with superior sustainability is likely to be perceived to

be the morally superior alternative because the preference for sustainability is motivated by altruistic goals whereas the preference for functional attributes is motivated more by self-interest goals. As such, choosing the sustainably superior product may reduce guilt given that it is the morally superior option. However, doing so may also increase distress given that consumers are forgoing a satisfactory level of functional performance. Thus, we might expect consumers to choose superior functional performance over superior sustainability. This prediction would be consistent with prior research that has demonstrated that individuals place a greater weight on the functional attributes of a product in determining product preference than on the ethical attributes when making tradeoffs between products (Auger et al 2008). However, once a satisfactory level of functional performance has been achieved, we would expect feelings of distress to decrease such that consumers will be relatively more likely to choose the product with superior sustainability in an effort to minimize the feeling of guilt associated with choosing performance over sustainability. In other words, consistent with Chitturi et al (2007) we propose a functional dominance effect whereby consumers in a loss-loss scenario will choose performance over sustainability. However, in contrast to Chitturi et al (2007), we propose that in the current context of trading-off performance and sustainability, consumers are choosing the morally inferior option, and are doing so in an effort to reduce feelings of distress. However, once a sufficient threshold of functional performance has been achieved, i.e., in a gain-gain scenario in which both options provide at least satisfactory levels of functional performance and sustainability, consumers will be relatively more likely to choose the product with superior sustainability.

H1a: The choice between a product with superior functional performance and a product with superior sustainability exhibits a functional dominance effect whereby functional performance (vs. sustainability) is weighted more heavily in a choice task until a satisfactory level of functional performance is achieved.

H1b: When neither satisfactory levels of functional performance nor sustainability have been achieved, the choice of a product with superior functional performance over a product with superior sustainability is mediated by feelings of distress.

One factor that has been demonstrated to have an important impact on individual judgment and choice behavior in the context of sustainable products has been the importance of ethical issues and sustainability to the individual. Specifically, previous work has shown that individuals with a higher commitment to ethical and sustainability issues have higher evaluations of individual companies and greater perceptions of personal congruence with a company's objectives when that company is socially responsible (Sen and Bhattacharya 2001); are more likely to respond favorably to socially responsible actions by firms (Bhattacharya and Sen 2003); are likely to demonstrate greater willingness to pay for ethical products (Trudel and Cotte 2009); and place greater weight on ethical and sustainable attributes when making choices (Auger et al 2008). Together, these results suggest that consumers with a higher commitment to ethical and sustainability issues are likely to place a greater value on ethical and sustainable attributes of products. Therefore, when consumers contemplate choosing a product with superior functional performance over one with superior sustainability, we would expect feelings of guilt to increase as the importance that they personally place on sustainability increases. As a consequence, we would expect the likelihood of choosing the product with superior sustainability over the product with superior functional performance to increase as sustainability importance increases.

On the other hand, functional attributes fulfill prevention goals (Chernev 2004) such as increased confidence. Choosing the product with superior functional performance is likely to evoke greater confidence given that it is, by definition, more likely to provide high levels of functional performance (Higgins 1997; Chitturi et al. 2007). While contemplating the choice of a product with

superior functional performance over one with superior sustainability may increase guilt, it may also increase confidence, especially amongst those who do not believe that sustainability is important. As a consequence, we would expect the likelihood of choosing the product with superior sustainability over the product with superior functional performance to increase as sustainability importance increases. More formally,

- H1c: A consumers' choice between a product with superior functional performance and superior sustainability is moderated by the degree to which sustainability issues are important to them such that the likelihood of choosing the product with superior sustainability (superior functional performance) increases as sustainability importance increases (decreases).
- H1d: The moderation by sustainability importance on choice is mediated by the anticipatory emotions of guilt and confidence.

Previous literature has examined the differences in consumer responses to a trade-off situation based on the mode of preference elicitation (Chitturi et al. 2007). Chitturi et al. argued that different modes of preference elicitation trigger different decision making mechanisms; specifically, forced choice results in inter-attribute comparisons and leads individuals to a strategy of minimizing negative emotions in a loss-loss scenario, and maximizing positive emotions in a gain-gain scenario, whereas evaluation tasks (such as willingness-to-pay {WTP}) do not require inter-attribute comparisons and therefore may not be as emotionally charged as choice tasks. In other words, because inter-attribute comparisons are more likely in a choice (vs. evaluation) context, it is expected that the emotions evoked through inter-attribute comparisons will influence preferences in choice tasks but not in evaluation tasks. In the case of evaluation tasks, individuals evaluate the bundle of attributes offered by each option. Thus, individuals are likely to evaluate each bundle based on the ability of the embodied attributes to satisfy their needs.

As argued previously, preference for functional attributes of products are motivated by self-interested, prevention emotion oriented goals, whereas preference for sustainable attributes is motivated by altruistic goals. According to previous work, individuals have two motivations to satisfy, those of the consumer and those of the citizen (Casamhir and Dutihl 2003). The first of which, the consumer, tends to be dominant in the context of making product decisions. This identity has a selfish and short term orientation aimed at healthy and safe products with a low price, at products that lend status to the buyer, that give communicative significance, or provide direct enjoyment (Casamhir and Dutihl 2003) and is ‘first and foremost self and welfare-centered and will not protect the environment at the cost of her or his personal welfare’ (Paavola 2001). We anticipate that in an evaluative context (vs. choice context), because immediate prevention goals (satisfied by functional attributes) are more salient and compelling than altruistic, long-term goals (satisfied by sustainability attributes), subjects will have a greater WTP for products with superior functional performance over products with superior sustainability performance.

H2a: Consumers are willing to pay more for a product with superior functional performance than for a product with superior sustainability characteristics.

As discussed previously, there is evidence that as the importance of sustainability for consumers increases, so does the value that they place on product sustainability. As such, we expect that as sustainability importance increases, the previously discussed willingness to pay more for a product with superior functional attributes than for one with superior sustainability will decrease.

H2b: Consumer’s willingness to pay more for a product with superior functional performance than for a product with superior sustainability characteristics is moderated by the degree to which sustainability issues are important to them such that the difference in willingness to pay decreases as sustainability importance increases.

To address our final research question, we address one specific way for firms to increase the choice likelihood and/or WTP for products with superior sustainability relative to products with superior functional performance. We propose that products with superior sustainability are especially likely to benefit from the potential advantages of superior hedonics. Chitturi et al. (2007) show that beyond the minimum threshold of functional performance, consumers are willing to pay more for superior hedonics over functional performance. What would be the impact on consumer choice and willingness-to-pay (WTP) if, in a gain-gain trade-off scenario involving sustainability and functional performance, we add superior hedonics to both the choice options? Chitturi et al. (2007) find that products with superior hedonic attributes induce feelings of guilt in consumers, relative to products with superior functional attributes. Based on our previous arguments, we anticipate that in leaning toward a product with superior functional (but morally inferior) attributes in the trade-off with a product with superior sustainability (and morally superior) attributes, consumers will experience higher levels of guilt. Given the higher level of guilt induced by leaning toward the functionally superior product, we expect that the addition of superior hedonics to the morally superior sustainable product is likely to evoke proportionally less guilt than the addition of superior hedonics to the morally inferior but functionally superior product. Therefore, we predict that in a gain-gain scenario, the addition of superior hedonics will improve consumer choice and WTP more for products that have superior sustainability attributes than for those with superior functional attributes.

H3a: Superior aesthetic (i.e., hedonically superior) design increases the likelihood of choosing, and willingness to pay for, a product with superior sustainability characteristics relative to the likelihood of choosing, and willingness to pay for, a product with superior functional performance.

H3b: The moderation of superior aesthetic design on choice and willingness to pay for a product with superior sustainability characteristics (vs. superior functional performance) is mediated by the compensatory effect of reducing the anticipatory guilt of choosing a hedonically superior alternative.

STUDY 1: CHOICE GIVEN A TRADE-OFF

The overall objective of Study 1 was to test our conceptual model, depicted in Figure 1, of the factors influencing consumers' choice between a product with a superior sustainability rating and a product with a superior functional performance rating. Specifically, we sought to demonstrate that given a trade-off, consumers will choose a product with a superior functional performance rating over a product with a superior sustainability rating, due to feelings of distress, until an acceptable threshold of functional performance has been achieved. Further, we sought to demonstrate that choice given this trade-off also depends on the degree to which participants believe that sustainability issues are important and that this moderation, in turn, is mediated by differences in the anticipatory emotions of guilt and confidence experienced as participants evaluate their options.

Study Participants and Procedure

One hundred and nineteen undergraduate students participated in this study in exchange for course extra credit. The study was conducted online, using a third-party survey development software package. Participants were presented with a choice between two pairs of shoes that were described as differing along two dimensions: functional performance and sustainability. Functional performance was described as relating to both the “durability (of the outsoles, seams, lining) and construction (manufacturing/assembly quality)” of the shoes whereas sustainability

was described as relating to “a variety of environmental issues (e.g. energy use, resource use, pollution) and social issues (e.g. factory safety, labor practices, community service).” As illustrated in Figure 2, participants were presented with a summary scorecard with information about the two pairs of shoes along both of these dimensions. In addition, they were instructed to assume that the pairs of shoes did not differ with respect to their cost, attractiveness or level of comfort.

Participants’ first task was to rate each pair of shoes in terms of their functional performance and sustainability so that the trade-off between the two pairs of shoes was readily apparent. Next, participants were asked to imagine that they needed to choose between these two pairs of shoes, assuming one of the following two scenario manipulations. Participants in the High Goal condition (see Appendix 1) were presented with a scenario in which the functional performance and the sustainability were both very important. In this scenario, the choice presented to them represented a loss-loss scenario in which neither option would satisfy their need for both high functional performance and high sustainability. In the Low Goal condition, participants were presented with a scenario in which lower levels for both functional performance and sustainability would be sufficient. In this condition, the choice represented a gain-gain scenario in which both options would satisfy their needs along both dimensions. We counterbalanced the order of presentation of the two shoe scorecards on the left vs. right of the screen. Therefore, this study used a 2 (Goal: Low vs. High) vs. 2 (Order: Superior Functional Performance option on the left {right}, Superior Sustainability on the right {left}) design.

After reviewing the information about their respective choice scenarios, participants were asked to imagine that they were leaning towards choosing Shoe A and were instructed to indicate the intensity with which they were feeling distress, guilt and confidence. This protocol,

consistent with that used by Chitturi et al (2007) in a related trade-off context, was instrumental in our effort to identify which emotions mediated their choice (i.e., anticipatory emotions) as opposed to which emotions they thought might result from a given choice (i.e., anticipated emotions). Participants rated the intensity of these emotions on a 1 (not at all) to 9 (very high) scale. After their ratings for Shoe A, participants provided similar ratings assuming that they were leaning towards choosing shoe B.

After rating their anticipatory emotions, participants were asked to make a choice between the two pairs of shoes. This choice served as our focal dependent measure. Before making this choice, participants were reminded about the specifics of the scenario within which they were making their choice. Finally, we asked participants to rate how important environmental issues and social issues were to them.

Results

Prior to our analysis, we converted all of the product ratings such that the pair of shoes with superior functional performance (hence, “performance shoes”) was always anchored at the low end of the scale (-4) and the pair of shoes with superior sustainability (hence, “sustainable shoes”) was always anchored at the high end of the scale (+4). As a first step, we analyzed the ratings of shoe functional performance and sustainability to confirm our intended manipulations. The mean rating for functional performance, $M_{func} = -2.90$, was significantly lower than the midpoint of zero, $F(1, 118) = 308.33, p < .0001$, indicating that participants correctly identified which pair of shoes had superior functional performance. Similarly, the mean rating for sustainability, $M_{sust} = 2.89$, was significantly higher than the midpoint of zero, $F(1, 118) =$

227.59, $p < .0001$, indicating that participants correctly identified which pair of shoes had superior sustainability.

Next, we analyzed our focal dependent measure of shoe pair choice to determine which pair of shoes was, overall, more likely to be chosen. Of the 119 participants in this study, 74 chose the performance shoes whereas only 44 chose the pair sustainable shoes. This overall preference for performance over sustainability was significant, $\chi^2 = 7.89, p < .01$ suggesting that, at least in situations similar to the current context, consumers will choose performance over sustainability. Choice did, however, depend on the Goal scenario, $\chi^2 = 4.38, p < .05$, such that while participants in the loss-loss scenario strongly favored the performance shoes over the sustainable shoes (44 and 17), $\chi^2 = 11.09, p < .001$, participants in the gain-gain scenario were indifferent between the two pairs of shoes (27 chose the performance shoes, 31 chose the sustainable shoes, $\chi^2 = .28, p = .60$). Thus, in support of H1a, while participants overall favored the performance shoes over the sustainable shoes, choice given this trade-off exhibited a functional dominance effect such that performance was chosen over sustainability only until a satisfactory threshold of performance had been achieved.

In order to analyze the role of the anticipatory feeling of distress with respect to this functional dominance effect, we created a difference score for distress by subtracting participants' rating of the intensity of this emotion when leaning towards the sustainable shoes from the rating experienced when leaning towards the performance shoes. While overall participants did not feel a difference in distress while leaning towards choosing either shoe, $M_{dist} = .08, F(1, 118) = .11, p = .74$, distress did depend upon the Goal condition, $F(1, 117) = 5.58, p = .02$. Specifically, in the loss-loss condition, participants felt significantly more distress when leaning towards the sustainable (vs. performance) shoes, $M_{dist} = .59, F(1, 60) = 3.88, p = .05$.

However, in the gain-gain condition, there was no significant difference in the distress evoked by either option, $M_{dist} = -.47$, $F(1, 57) = 1.96$, $p = .17$. Further, while distress also predicted choice, $\chi^2 = 10.25$, $p = .001$, when entering both the Goal condition and distress into a model predicting choice, distress was still significant, $\chi^2 = 8.50$, $p < .01$, while the Goal condition became non-significant, $\chi^2 = 2.08$, $p = .15$. In support of H1b, a test of mediation (Barron and Kenny 1986) suggested that the effect of the Goal condition was partially mediated by distress, Sobel $t = 1.86$, $p = .06$.

Next, we created a score for each participant's Sustainability Importance by averaging the ratings for importance of environmental issues and social issues. As expected, choice did depend upon Sustainability Importance, $\chi^2 = 7.49$, $p < .01$. Specifically, and in support of H1c, the likelihood of choosing the sustainable shoes increased as Sustainability Importance increased. Thus, in addition to the effect of the context of the decision, i.e. the Goal condition, the individual difference of Sustainability Importance also had a significant effect on choice. Next, we performed a follow-up analysis to determine whether the effect of Goal on choice was moderated by Sustainability Importance. Goal and Sustainability Importance did not interact, $\chi^2 = .55$, $p = .46$, suggesting that each had an independent effect on choice. Having demonstrated that both the Goal condition, i.e. the context of the decision, and the stable individual difference of Sustainability Importance independently affected choice, the next step was to determine what effect, if any, anticipatory guilt and confidence had on choice and whether differences in the intensity of these emotions could explain the effects of Sustainability Importance and/or Goal.

Similar to our treatment of distress, we created a difference score for guilt and confidence by subtracting participants' rating of each emotion when leaning towards the sustainable shoes from the rating experienced when leaning towards the performance shoes. Contemplating a

choice of the performance shoes vs. contemplating a choice of the sustainable shoes led to significantly more guilt ($M_{guilt} = -2.57, F(1, 118) = 88.50, p < .0001$) yet significantly greater confidence ($M_{conf} = -1.02, F(1, 118) = 14.10, p < .001$) for participants overall. However, whether or not participants rated the intensity of these emotions differently for the performance shoes vs. the sustainable shoes depended on their Sustainability Importance rating. Specifically, the degree to which participants felt more guilty while leaning towards the performance shoes (vs. the sustainable shoes) depended significantly on Sustainability Importance, $F(1, 117) = 4.37, p < .04$ such that participants felt less guilty as their Sustainability Importance decreased. Indeed, a spotlight analysis (Irwin and Baron 2001) suggests that while participants at a high level of Sustainability Importance (6.0/7.0) felt more guilty about leaning towards the performance shoes, $F(1, 117) = 78.85, p < .0001$, those at a low level of Sustainability Importance (2.0/7.0) did not, $F(1, 117) = 1.99, p = .16$. While the degree to which participants felt more confident while leaning towards the performance shoes (vs. the sustainable shoes) also depended on Sustainability Importance, $F(1, 117) = 19.58, p < .0001$, the pattern was reversed such that participants at a high level of Sustainability Importance (6.0/7.0) did not feel more confident about either pair of shoes, $F(1, 117) = 1.46, p = .57$, but those at a low level of Sustainability Importance (2.0/7.0) felt more confident when leaning towards the performance shoes (vs. the sustainable shoes), $F(1, 117) = 30.91, p < .0001$.

Next, we sought to determine whether the intensity of these anticipatory emotions predicted choice and, if so, whether these emotions could explain the effects of Sustainability Importance and/or Goal on choice. Choice was independently predicted by both guilt, $\chi^2 = 9.84, p < .01$, and confidence, $\chi^2 = 11.72, p < .001$ such that participants were more likely to choose the performance shoes as the intensity of confidence in the performance shoes (vs. the

sustainable shoes) increased, but were more likely to chose the sustainable shoes as the intensity of guilt induced by the performance shoes (vs. the sustainable shoes) increased. A test of mediation confirmed that the intensity of confidence and guilt mediated the effect of Sustainability Importance on choice. Specifically, confidence mediated the effect of Sustainability Importance on choice, Sobel $t = 2.71, p < .01$, and – although not as significant – guilt also mediated the effect of Sustainability importance on choice, Sobel $t = 1.79, p < .07$, thereby supporting H1d. On the other hand, the effect of Goal, i.e. the aforementioned threshold effect, appears to have been independent of these emotions. In other words, neither guilt, $F(1, 117) = .47, p = .50$, nor confidence, $F(1, 117) = .06, p = .80$ depended on the Goal condition.

Discussion

Our results confirm the conceptual model proposed in Figure 1. Given a choice between a product with superior functional performance (and average sustainability) and a product with superior sustainability (and average functional performance), consumers will chose functional performance over sustainability until a minimum threshold of functional performance is met; further, this result was shown to obtain due to feelings of distress. Once this threshold has been met, choice depends on the degree to which sustainability is important to consumers. Further, the moderating effect of Sustainability Importance is due to differences in the intensity of anticipatory emotions experienced while considering a trade-off. Our results suggest that consumers who do not believe that sustainability is important will chose the performance shoes because they are more confident of the performance of these shoes. However, consumers who do believe that sustainability issues are important do not feel more confident about either shoe.

Rather, they choose the sustainable shoes because doing so avoids the guilt associated with choosing performance over sustainability.

STUDY 2: WILLINGNESS TO PAY GIVEN A TRADE-OFF

The primary objective of Study 2 was to determine whether consumers, after choosing between a between a product with a superior functional performance rating (and average sustainability rating) and a product with a superior sustainability rating (and average performance rating), would demonstrate a differential willingness-to-pay for the product of their choice. In other words, given this trade-off, how much more would consumers be willing-to-pay for their chosen option vs. the non-chosen alternative and would this depend upon whether they chose performance over sustainability, or vice-versa? In addition, recall that in Study 1 sustainability was described to participants as broadly relating to both social and environmental issues. A second objective of Study 2 was to determine whether the results of Study 1 would still obtain if sustainability was described as relating to either social or environmental issues alone.

Study Participants and Procedure

One hundred and forty-seven undergraduate students, from a different university than the one represented in Study 1, participated in this study in exchange for course extra credit. Once again, the study was conducted online, using a third-party survey development software package. The stimuli and procedure were the same as those used in Study 1 with three changes. First, having demonstrated the functional dominance effect in Study 1, Study 2 focused entirely on a

gain-gain scenario in which neither high levels of functional performance nor sustainability were required to satisfy a given scenario. Second, as opposed to using an overall rating of sustainability addressing both environmental and social issues, the “sustainable shoes” that participants were presented with were described as either environmentally responsible (e.g., with respect to energy use, resource use and pollution) or socially responsible (e.g., with respect to factory safety, labor practices, community service). Third, after participants indicated their choice of shoes, they were asked to indicate how much more they would be willing to pay, in percentage terms, for the shoes that these chose relative to the shoes that they did not choose.

Results

We followed the same data conversion protocol as the one used in Study 1 such that the performance shoes were always anchored at the low end of the scale (-4) and the sustainable shoes were always anchored at the high end of the scale (+4). As a first step, we analyzed the ratings of shoe functional performance and sustainability to confirm our intended manipulations. The mean rating for functional performance, $M_{func} = -3.34$, was significantly lower than the midpoint of zero, $F(1, 146) = 1179.55, p < .0001$, indicating that participants correctly identified which pair of shoes had superior functional performance. Similarly, the mean rating for sustainability, $M_{sust} = 3.52$, was significantly higher than the midpoint of zero, $F(1, 146) = 1525.76, p < .0001$, indicating that participants correctly identified which pair of shoes had superior sustainability.

Consistent with Study 1, choice did depend upon Sustainability Importance, $\chi^2 = 22.87, p < .0001$, such that participants were more likely to choose the sustainable shoes as the degree to which they believed that sustainability issues were important to them increased. Further,

contemplating a choice of the performance shoes over the sustainable shoes led to more guilt, $M_{guilt} = -2.31$, $F(1, 146) = 105.96$, $p < .0001$, yet also greater confidence, $M_{conf} = -1.65$, $F(1, 146) = 50.07$, $p < .0001$, than contemplating a choice of the sustainable shoes over the performance shoes. Replicating the results from Study 1, the effect of Sustainability Importance was mediated by both guilt, Sobel $t = 2.63$, $p < .01$, and confidence, $t = 2.93$, $p < .01$. Next, we sought to determine whether the Sustainability Type, i.e., environmental or social responsibility, had any effect on these results. Choice did not depend on Sustainability Type, $\chi^2 = .01$, $p < .93$, nor did either of the mediating emotions depend on Sustainability Type (guilt - $F(1, 145) = 1.86$, $p = .17$; confidence - $F(1, 145) = .49$, $p = .48$) suggesting that the conceptual model depicted in Figure 1 generalizes to different sustainability issues. As such, we combined data for both Sustainability Types in subsequent analyses.

Finally, we sought to determine what participants were willing-to-pay for their chosen option vs. the non-chosen alternative and whether this depended upon whether they chose performance over sustainability, or vice-versa. Our results, supporting H2a, suggest that participants who chose the performance shoes were willing-to-pay significantly more, vs. the non-chosen option, than participants who chose the sustainable shoes, $F(1, 126) = 10.87$, $p = .01$.¹ Specifically, participants who chose the performance shoes indicated an average willingness-to-pay of 26.5% more than they would be willing-to-pay for the sustainable shoes. However, participants who chose the sustainable shoes indicated an average willingness-to-pay of only 12.1% more than they would be willing-to-pay for the performance shoes. Sustainability Type did not have an effect on WTP, regardless of whether participants chose the performance shoes, $F(1, 75) = .23$, $p = .63$, or the sustainable shoes, $F(1, 49) = .41$, $p = .52$. WTP did,

¹ 19 participants did not provide willingness-to-pay information, reducing our sample from 147 to 128

however, depend on Sustainability Importance, at least when the performance shoes were chosen. When the performance shoes were chosen, the relative WTP decreased as Sustainability Importance increased, $F(1, 75) = 3.81, p = .05$, thereby supporting H2b; the relative WTP did not depend on Sustainability Importance when the sustainable shoes were chosen, $F(1, 49) = 1.73, p = .19$.

Discussion

Study 2 replicates key findings from Study 1 and provided results suggesting that the proposed conceptual model generalizes to different definitions of sustainability. Specifically, choice depended on Sustainability Importance, mediated by the emotions of guilt and confidence, regardless of whether the sustainability issue was environmental responsibility or social responsibility. The focus of Study 2, however, was on understanding how a trade-off between a higher performing product and a more sustainable product would affect willingness-to-pay. In contrast with prior research suggesting that consumers are willing-to-pay more for sustainability (Cotte and Trudel, 200X), our results suggest that while consumers who choose sustainability over performance are willing-to-pay somewhat more for sustainability, consumers who choose performance over sustainability are willing-to-pay substantially more. In other words, given a trade-off, not only are consumers more likely to choose performance over sustainability (Study 1), they are also willing-to-pay more for performance than for sustainability (Study 2).

STUDY 3: IMPROVING CHOICE LIKELIHOOD AND WTP FOR SUSTAINABLE PRODUCTS

In Study 3 (pending), we intend to demonstrate a way for firms to improve both choice likelihood and WTP for sustainably superior products given a trade-off task. To extend the results of prior studies, Study 3 will be conducted within the context of cell phones. We intend to demonstrate that superior aesthetic (i.e., hedonically superior) design increases the likelihood of choosing, and willingness-to-pay for, a sustainable product more than it improves the likelihood of choosing, and willingness to pay for, a product with superior functional performance (see Figure 3 for example stimuli).

Given the results from Study 1 and Study 2, which suggest that anticipatory emotions can play an important role in a trade-off task, we intend to provide evidence in Study 3 that our predicted result is mediated by the compensatory effect of reducing the anticipatory guilt of choosing a hedonically superior alternative.

GENERAL DISCUSSION

Given a choice between a product with superior sustainability (and average functional performance) and a product with superior functional performance (and average sustainability), which will be preferred and why? In addition, how does consumers' willingness-to-pay differ for each product given their choice? And critically, how can choice likelihood and willingness-to-pay for products with superior sustainability be improved despite a trade-off with functional performance? Prior research has shown that consumers understand the importance of sustainable attributes provided they do not have to compromise on functionality (Trudel and Cotte 2009). What if they have to tradeoff functional performance for sustainability? This research studies the emotional and behavioral consequences of such tradeoffs between functional performance and sustainability. The results across the two studies (Study 3 pending) were consistent and support our predictions.

The primary insights provided by this research are: 1) below a minimum threshold of functional performance, consumers favor functional performance over sustainability in order to lower the feeling of distress; 2) consumer preference for sustainably superior products (vs. products with superior functional performance) increases as the importance that consumers place on sustainability increases; and, 3) above a minimum threshold of functional performance, consumer preference for functional performance over sustainability is mediated by emotions of guilt and confidence. A summary discussion of the theoretical contributions follows. The paper concludes with a discussion of the strategic insights provided by this research for product designers and marketers. The results provide guidance on how emotions of guilt, distress and confidence can be controlled by the designers and marketers to make sustainable product design financially attractive.

Theoretical Contribution

Based on prior work by Higgins (1997; 2001), Chernev (2004), and Chitturi et al., (2007) we know that consumers favor the morally superior functional attributes over the morally inferior hedonic attributes. Moreover, in such tradeoffs both functionality and hedonics fulfill self-serving goals. The choice is between self-serving morally superior functional attributes that fulfill prevention goals and self-serving morally inferior hedonic attributes that fulfill promotion goals. However, in tradeoff scenarios involving functional and sustainable attributes, the choice is between the altruistic and, therefore, morally superior sustainable attributes and the self-serving morally inferior functional attributes. Therefore, consistent with the appraisal theory of emotions (Roseman 1991), consumers feel greater guilt for not favoring sustainability over functionality, and feel greater confidence when favoring functionality over sustainability. Below the minimum threshold of functional performance, feelings of confidence dominates over feeling of guilt leading to greater choice and willingness to pay for a product with superior functional performance. However, above the minimum threshold of functional performance, the feeling of guilt becomes stronger, therefore consumer choice and willingness to pay for sustainable product improves. Further, this relationship is moderated by the importance of sustainability.

Our research reveals that, despite the moral superiority of sustainable attributes over functional attributes, and in contrast with the moral superiority of functional attributes over hedonic attributes (Chitturi et al. 2007), the principle of functional precedence that favors functional attributes over other types of attributes holds true. However, consistent with Chitturi et al., (2007), we find evidence of a threshold effect for a minimum level of functional performance beyond which sustainability becomes relatively more desirable for consumers. To the best of our

knowledge, this is the first time a threshold effect of functional performance has been demonstrated in tradeoffs involving morally superior, sustainable attributes. Prior research by Chitturi et al., (2007) that tested the principle of functional precedence for the first time involving hedonic and functional attributes was unable to make this conclusion. This is because in that study the principle of functional precedence and the moral superiority were aligned in favor of functional attributes over hedonic attributes. However, in this research the moral superiority is misaligned with functional superiority and aligned with sustainability. This is a novel theoretical contribution because it implies that the principle of functional precedence is driven more by basic needs than a morally superior imperative, consistent with Maslow's hierarchy of needs (Maslow 1970).

Another theoretical contribution of the current research is the elucidation of the emotions underlying choice given a trade-off between sustainability and functional performance. Specifically, we provide evidence of the roles that distress, confidence and guilt play in these decisions and also show how patterns of emotions in this context depend upon the importance that individuals place on sustainability.

Managerial Implications and Future Research

The current research findings could have significant implications for decision makers in product design and marketing organizations. The research finds that consumers are not willing to pay more for sustainable products if they have to give up functional performance. However, the results of this research also show that consumer preference for sustainability improves after the minimum threshold of functional performance is met. Further, the research finds that the relative

willingness to pay for sustainability improves with customers who consider sustainability relatively more important. This offers an opportunity for marketers to segment the market for products with greater sustainability. Further, the results suggest that designers should know the minimum threshold of functional performance for each target segment and make sure they meet or exceed that functional threshold before promoting sustainability. The promotion campaign highlighting sustainability of a product that does not meet minimum threshold of functional performance is unlikely to persuade consumers. Another insight offered by this research is how the emotions of guilt, distress, and confidence mediate the relationship between sustainability, functional performance, choice, and willingness to pay. Marketers can design promotion campaigns based on their understanding of the role feelings of guilt, distress, and confidence play in determining consumer behavior. This is likely to improve the financial performance of the product by improving their willingness to pay for sustainability. Based on the results from this research, we offer the following guidelines for design and marketing strategists. They are: 1) designers and marketers must know the minimum threshold of functionality for their target customer segment. This is because consumers will not choose a more sustainable product despite the moral superiority if it does not meet the minimum threshold of functionality; 2) customers are not willing to pay more for sustainability if it means inferior functionality; and 3) designers should calibrate emotional response of sustainability and functional performance for feelings of guilt, distress, and confidence to create the right level and mix of consumer feelings; and 4) marketers then should design their promotion, pricing, and placement strategy keeping the designed product and the competition in mind. In conclusion, it is clear that sustainable product development is a desired goal, but designing and marketing sustainability requires careful planning to be financially viable.

FIGURE 1:

CONCEPTUAL MODEL OF CHOICE GIVEN A TRADE-OFF BETWEEN SUSTAINABILITY AND PERFORMANCE

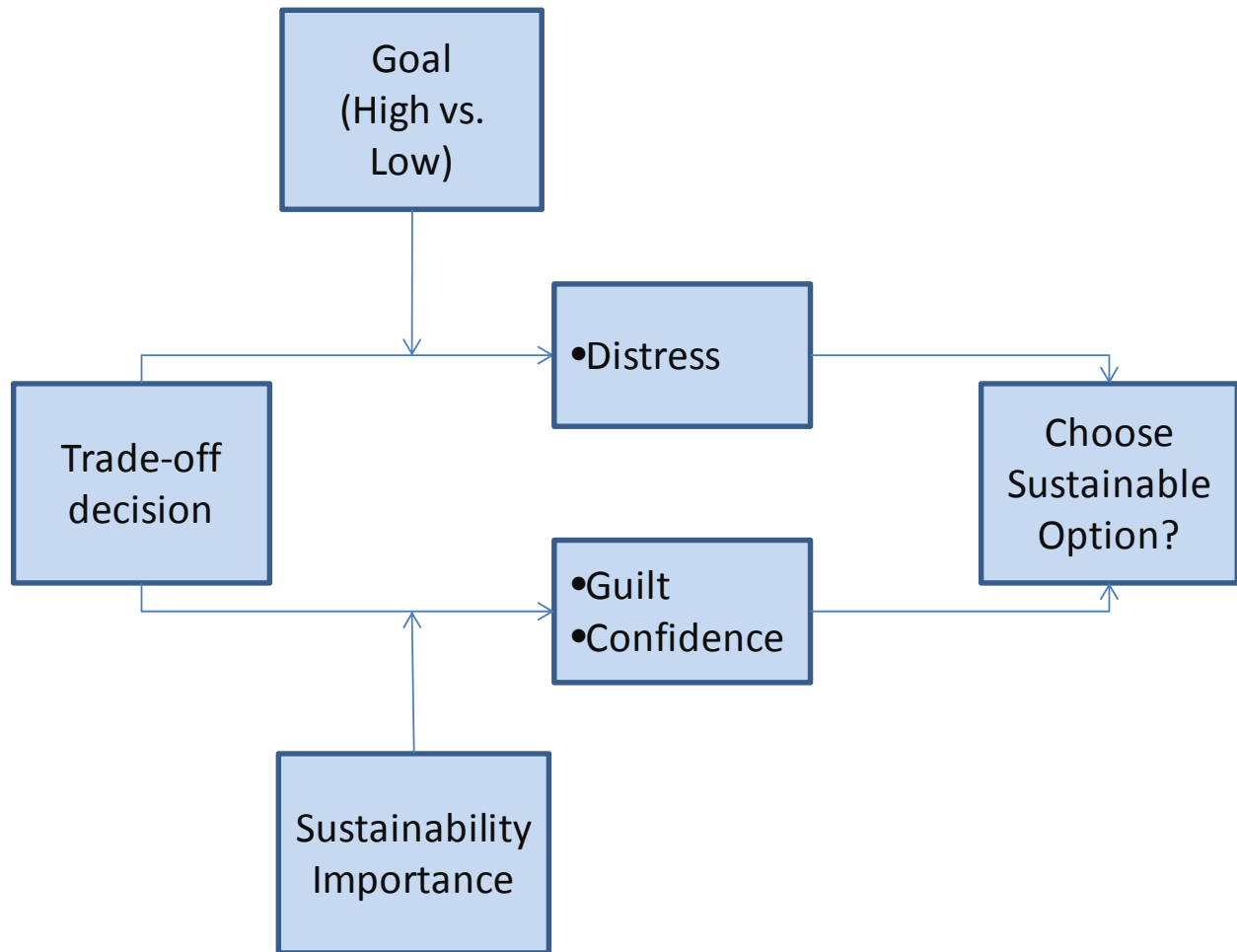


FIGURE 2

STUDY 1 ILLUSTRATIVE STIMULI

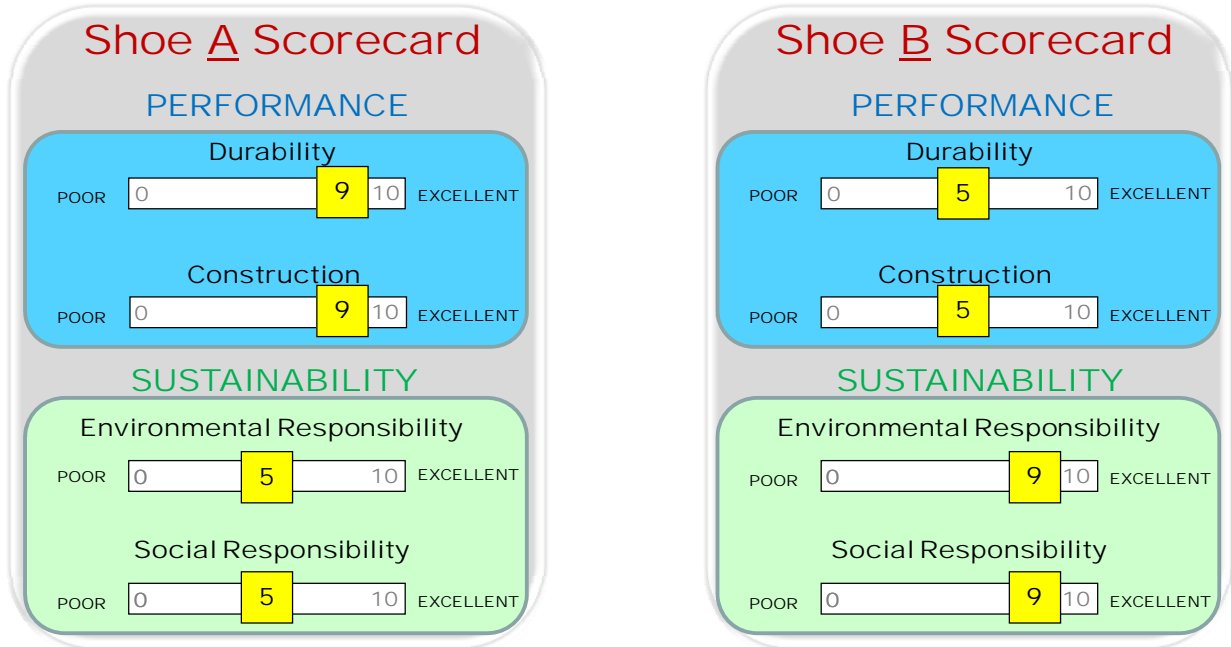
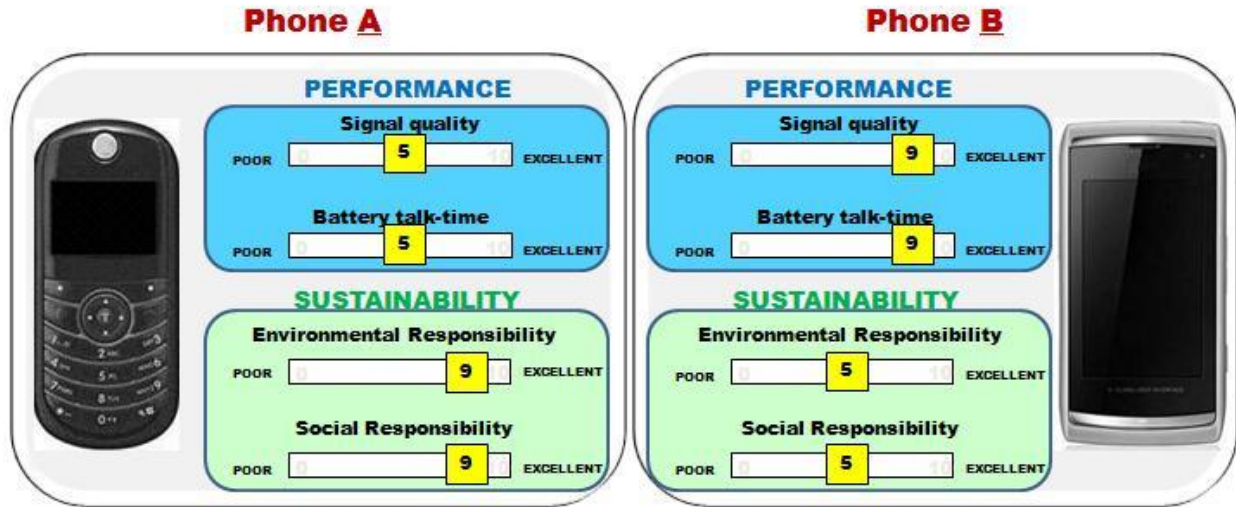


FIGURE 3

STUDY 3 ILLUSTRATIVE STIMULI



APPENDIX 1

HIGH GOAL SCENARIO

Now, imagine that you will be using these shoes daily on an extended assignment as a salesperson in Bhutan. Shoes that fit the shape and size of Western feet are hard to find in Bhutan and are very expensive, so assume that this will be the only pair you have for your 12 month assignment. While the shoes need to last for the duration of your assignment, their image is important too - the business community in Bhutan is progressive with respect to the need for corporate environmental and social responsibility and they are relatively knowledgeable about the sustainability performance of different brands.

LOW GOAL SCENARIO

Now, imagine that you will be using these shoes only occasionally on weekends. You plan to use these shoes for doing simple errands (like getting laundry done, grocery shopping), doing light work around your house or apartment (like mowing the lawn). Though you only plan on wearing them occasionally, you might also wear them when you are just hanging out in your house or apartment.

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